

Claims

1. A device for measuring the aerobic capacity of a subject, the device comprising input means for receiving a measurement of distance travelled by a user in a given time, said time being sufficiently large to ensure that the user is working at the maximum of his or her aerobic capacity, a processor for determining from said values of distance and time an aerobic capacity, and output means for outputting a measure of exercise level to the user based on the calculated aerobic capacity, wherein the aerobic capacity conforms to the relationship expressed as:

$$VO_{2max} = a + bx + c(x^2)$$

wherein VO_{2max} is the maximal oxygen consumption of a user,
wherein a, b and c are non-zero constants, and
wherein x is a measure of distance per unit time.

2. A device according to claim 1, wherein VO_{2max} is expressed in millilitres of oxygen per kg bodyweight of the user per minute, x is a measure of the speed expressed as the distance run in miles in a time period of 12 minutes, and the constants a, b and c are in the following ranges:

$$2.2 \leq a \leq 3.4$$

$$20 \leq b \leq 27$$

$$2.0 \leq c \leq 2.9$$

3. A device as claimed in claim 2, wherein the constants a, b and c are in the following ranges:

$$2.4 \leq a \leq 3.2$$

$$22 \leq b \leq 25$$

$$2.2 \leq c \leq 2.7$$

3. A device as claimed in claim 2, wherein the constants a, b and c are in the following ranges:

$$2.7 \leq a \leq 2.9$$

5 $23 \leq b \leq 24$

$$2.4 \leq c \leq 2.5$$

4. A device as claimed in claim 3, wherein a is approximately 2.8, b is approximately 23.44 and c is
10 approximately 2.46

5. A device as claimed in any preceding claim, wherein the processor is also capable of calculating, from the previously determined aerobic capacity of the user, a speed
15 target or target range equivalent to a proportion of the user's aerobic capacity, and dynamically outputting the current speed with an indication of the proximity of the current speed to the target speed or target speed range.

20 6. A method of measuring the aerobic capacity of a subject, comprising the steps of:
receiving a measurement of distance travelled by a user in a given time, said time being sufficiently large to ensure that the user is working at the maximum of his or her
25 aerobic capacity,
determining from said values of distance and time an aerobic capacity, and
outputting a measure of exercise level to the user based on the calculated aerobic capacity,
30 wherein the aerobic capacity conforms to the relationship expressed as:

$$VO_{2max} = a + bx + c(x^2)$$

wherein VO2max is the maximal oxygen consumption of a user,

wherein a, b and c are non-zero constants, and

wherein x is a measure of distance per unit time.

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7. A computer program product comprising instructions which when executed in a computing device are effective to cause the computing device to measure an exercise level of a user by carrying out the steps of:

10 receiving a measurement of distance travelled by a user in a given time, said time being sufficiently large to ensure that the user is working at the maximum of his or her aerobic capacity,

15 determining from said values of distance and time an aerobic capacity, and

outputting a measure of exercise level to the user based on the calculated aerobic capacity,

wherein the aerobic capacity conforms to the relationship expressed as:

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$$VO2max = a + bx + c(x^2)$$

wherein VO2max is the maximal oxygen consumption of a user,

25 wherein a, b and c are non-zero constants, and

wherein x is a measure of distance per unit time.

8. A computer program product as claimed in claim 7, when provided as a piece of software installed on a mobile telecommunications device, a piece of software for download to a mobile telecommunications device, an electronic circuit encoding the aforesaid instructions, an electrical signal encoding the aforesaid instructions, or a magnetic, optical or other physical program carrier.

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9. A system for measuring an exercise level of a user, the system comprising a global positioning system (GPS) module for measuring a geographical location of a user or a speed of a user, and a mobile telecommunications device having an active communication link, in use, with the GPS module, the mobile telecommunications device being updated regularly with the position of or speed of the GPS module, and the mobile telecommunications device being provided with computer program means for calculating, from said position or speed, an exercise level of the user in terms of aerobic capacity.

10. A system as claimed in claim 9, further comprising a remote monitoring computer in communication with the telecommunications device, said computer being adapted to receive and process exercise data received from said telecommunications device over a mobile telecommunications network accessed by the telecommunications device.

10. A system as claimed in claim 9 or 10, wherein the GPS module is integral to the telecommunications device.

11. A system as claimed in claim 9 or 10, wherein the GPS module is provided as an accessory for the telecommunications device.

12. A system as claimed in claim 9 or 10, wherein the GPS module is a separate GPS unit sharing a compatible communications link with the telecommunications device.

13. A method of measuring an exercise level of a user, the method comprising the steps of:

measuring a geographical location of a user or a speed of a user using a global positioning system (GPS) module,

5 regularly updating a mobile telecommunications device with the position of or speed of the GPS module, calculating, from said position or speed, an exercise level of the user in terms of aerobic capacity.

14. A computer program product comprising instructions
10 which when executed in a computing device are effective to cause the computing device to measure an exercise level of a user by carrying out the steps of:

receiving data indicative of the speed or position of a user using a global positioning system (GPS) module,
15 calculating, from said position or speed, an exercise level of the user in terms of aerobic capacity.